CLAIMS

1. A device for reshaping a cardiac valve (26), said device being elongate and having such dimensions as to be insertable into a cardiac vessel (24) and having two states, in a first state (K) of which the device has a shape that is adaptable to the shape of the vessel (24), and to the second state (K') of which the device is transferable from said first state (K), said device comprising

a fixing means (22,23;22a,23a) for fixing the ends of the device within the vessel (24), when the device is first positioned therein,

a shape-changing member (20;20a) for transferring the device to the second state (K') by reshaping it, and

a delay means (21;21a) for delaying said reshaping until the fixing of the ends of the device has been reinforced, wherein said delay means delays said reshaping by keeping said device in said first state (K) until the delay means (21;21a) is resorbed.

2. The device according to claim 1, wherein said delay means (21;21a) comprises a resorbable sheath being arranged to enclose said shape-changing member.

3. The device according to claim 1 or 2, wherein said fixing means (22,23;22a,23a) is arranged to expand against the wall of the vessel (24) when first positioned therein.

4. The device according to any one of claims 1 to 3, wherein said fixing means (22,23;22a,23a) is arranged to grow into the wall of the vessel (24), whereby said fixing of the ends of the device is reinforced.

5. The device according to any one of the preceding claims, wherein said fixing means (22,23;22a,23a) comprises hook means, by means of which said fixing of the ends of the device is reinforced.

6. The device according to any one of the preceding claims, wherein said fixing means (22,23;22a,23a)

comprises a self-expandable stent at each end of the device.

7. The device according to any one of the preceding claims, wherein said shape-changing member (20;20a) comprises a shape memory material providing said reshaping of the device.

8. The device according to claim 7, wherein said shape-changing member (20;20a) comprises Nitinol providing said reshaping of the device.

9. The device according to any one of the preceding claims, wherein said reshaping of the device comprises shortening of the device.

10. The device according to any one of the preceding claims, wherein said device is used for treatment of mitral annulus dilatation.

11. The device according to claim 10, wherein said vessel (24) is the coronary sinus.

12. The device according to claim 11, wherein said reshaping of the device is used for reducing the radius of curvature of the coronary sinus.

13. A method for reshaping a cardiac valve (26), comprising the steps of

inserting an elongate device into a cardiac vessel (24),

fixing the ends of the device within the vessel (24),

reinforcing said fixing of the ends of the device,

reshaping the device, and

delaying said reshaping by a delay means (21;21a) so that the step of reinforcing said fixing is performed before the step of reshaping the device.

14. The method according to claim 13, wherein said step of reinforcing said fixing comprises providing growth of the ends of said device into the wall of the vessel (24).

15. The method according to claim 13 or 14, wherein a shape memory material is used in the device for said step of reshaping the device.

16. The method according to claim 15, wherein Nitinol is used in the device for said step of reshaping the device.

17. The method according to any one of claims 13 to 16, wherein said step of reshaping the device comprises the step of shortening the device.

18. The method according to any one of claims 13 to 17, wherein the method is used for treatment of mitral annulus dilatation.

19. The method according to claim 18, wherein said device is inserted into the coronary sinus in the vicinity of the posterior leaflet of the mitral valve.

20. The method according to claim 19, wherein said reshaping is used for reducing the curvature of the coronary sinus and thereby reducing the radius of circumference of the mitral valve annulus.

21. Apparatus for treating mitral annulus dilatation, the apparatus comprising:

a proximal stent section;

a distal anchor; and

means for drawing the distal anchor towards the proximal stent section.

22. The apparatus of claim 21 wherein the proximal stent further comprises a flange configured to abut the coronary ostium.

23. The apparatus of claim 21 wherein the distal anchor comprises a distal stent section.

24. The apparatus of claim 21 wherein the distal anchor comprises a Tee-shape adapted to be inserted into the left ventricular myocardium.

25. The apparatus of claim 24 wherein the means for drawing comprises a wire, the apparatus further comprising a coil section that disposed around the wire to redistribute a compressive load created by the wire.

26. The apparatus of claim 21 wherein the means for drawing comprises a central section connecting the proximal stent section to the distal anchor, the central section having a contracted state and a radially expanded state.

27. The apparatus of claim 26 wherein the means for drawing further comprises one or more biodegradable structures disposed on the central section.

28. The apparatus of claim 27 wherein the proximal stent section is configured to become biologically anchored to a vessel before the one or more biodegradable structures degrade.

29. The apparatus of claim 27 wherein the central section comprises a shape memory material.

30. The apparatus of claim 28 wherein the distal anchor comprises a distal stent section that is configured to become biologically anchored to a vessel before the one or more biodegradable structures degrade.

31. Apparatus for treating mitral annulus dilatation, the apparatus comprising:

a catheter having proximal and distal ends and a lumen extending therethrough;

a balloon affixed to the catheter, the balloon being in fluid communication with the lumen and having contracted and deployed states, wherein the balloon comprises a predetermined shape in the deployed state; and

a stent having contracted and deployed states, wherein the stent is plastically deformable by the balloon and substantially conforms to the predetermined shape of the balloon in the deployed state, wherein the stent is configured to apply a compressive load on the mitral valve annulus in the deployed state.

32. The apparatus of claim 31 wherein the balloon comprises a curved shape in the deployed state.

33. The apparatus of claim 32 wherein the balloon further comprises an anchor element disposed within the

balloon and configured to maintain the shape of the balloon in the deployed state.

34. Apparatus for treating mitral annulus dilatation, the apparatus comprising:

a proximal ball segment comprising a proximal ball having a lumen, a distal ball having a lumen, and a hollow rod extending therebetween;

a distal ball segment comprising a proximal ball having a lumen, a distal ball having a lumen, and a hollow rod extending therebetween; and

a connecting segment disposed therebetween, the connecting segment having a plurality of sockets, wherein the distal ball of the proximal ball segment and the proximal ball of the distal ball segment are configured to telescope and rotate relative to one another within the sockets.

35. The apparatus of claim 34 further comprising a plurality of interlocking segments coupled to the proximal and distal ball segments, wherein each interlocking segment comprises a proximal section having a socket, a distal section having a ball and a lumen extending therethrough, and a hollow central section extending therebetween.

36. The apparatus of claim 34 further comprising a cinch wire having proximal and distal ends and a ball coupled to the distal end, wherein the cinch wire is configured to extend longitudinally through the lumens of the proximal and distal ball segments.

37. The apparatus of claim 34 further comprising a push rod configured to engage a proximal ball segment.